

Autumn Term 1 YEAR 11 Foundation Maths

What? When? Why?	Lesson 1 Learning intentions (what can a student do at the end of the lesson)	Lesson 2 Learning intentions (what can a student do at the end of the lesson)	Lesson 3 Learning intentions (what can a student do at the end of the lesson)	Lesson 4 Learning intentions (what can a student do at the end of the lesson)
Week 1	Simplify one term expressions. Simplify expressions involving 2 or more linear terms Index rules with algebra Simplify expressions involving linear and quadratic terms	Expand a single bracket with linear terms. Expand a single bracket with quadratic and higher power terms. Expand and simplify a single bracket with other terms Expand and simplify more than one single bracket.	Substitute positive integers into linear expressions Substitute positive integers into expressions with brackets, powers and quotients. Substitute fractions into linear expressions. Substitute fractions into expressions with brackets, powers and quotients.	Substitute positive and negative numbers into expressions involving brackets, powers and fractions. Substitute into formulas.
Week 2	Add and subtract directed numbers. Solve linear equations of the form $ax+b=c$, $b=c+ax$, $b=ax+c$ where a is ± 1 and b and c are integers.	Solve linear equations of the form $ax+b=c$, $b=c+ax$, $b=ax+c$ where a , b and c are integers. Solve linear equations of the form $A(x+b) = c$ $C=a(x+b)$ $A(x+b) + c = d$ $D= a(x+b) + c$	Solve equations of the form: $x/a = b$ $b=x/a$ $\frac{x}{a} = \frac{b}{c}$ $x/a + b = c$ $\frac{x+a}{b} = c$ $\frac{a(x+b)}{c} = d$	Solve equations with x on both sides: $Ax+b = cx$ $Ax+b=cx+d$ $A(x+b) = c(x+d)$ $\frac{ax}{b} = \frac{bx}{c}$ $\frac{a + /-x}{b} = \frac{b + /-x}{c}$
Week 3	Simplify fractions Change between decimals and percentages Order fractions, decimals and percentages.	Calculate a % of a quantity without a calculator Increase and decrease a quantity by a percentage (non-calculator)	Use a calculator to find a percentage of a quantity. Use a calculator to increase or decrease by a percentage. Find simple and compound interest.	Find one quantity as a percentage of another. Find a percentage increase or decrease. Solve problems involving percentages.
Week 4	Understand and use basic angle rules and notation. Find missing angles on a straight line and at a point.	Find missing angles in a triangle. Find missing angles in triangles involving exterior angles and isosceles and equilateral triangles.	Find missing angles in quadrilaterals. Use properties of quadrilaterals (rhombus, parallelogram, kite) to find missing angles.	Know the names of Understand what an exterior angle of a polygon is. Find a missing exterior angle of a polygon.

Week 5	Find the sum of the interior angles of a polygon. Find a missing interior angle.	Understand what a regular polygon is. Find interior and exterior angle of a regular polygon.	Investigate angles between parallel lines and the transversal. Identify and calculate with alternate and corresponding angles.	Identify and calculate with co-interior, alternate and corresponding angles. Solve complex problems with parallel line angles.
Week 6	Add, subtract, multiply and divide integers (revision)	Add and subtract fractions <1	Add and subtract mixed numbers	Multiply and divide fractions <1
Week 7	Multiply and divide mixed numbers	Round a decimal to a given number of decimal places.	Round integers and decimals to a given number of significant figures.	Perform the 4 arithmetic operations with directed numbers.
Autumn Term 2 Maths Foundation				
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Week 1	Complete tables of values for straight line graphs	Find the gradient between two points.	Find the gradient of a straight line graph.	Find the gradient and y intercept from the equation of a straight line ($y=mx+c$)
Week 2	Given the equations, recognise which lines are parallel.	Complete tables of values and plot quadratic graphs.	Plot cubic and reciprocal graphs.	Interpret real life graphs inc distance time
Week 3	Simplify ratios including to the form $n:1$ and $1:n$. Convert between ratios and fractions.	Share in a given ratio.	Share in a given ratio: a) Given one share and the amount. b) Given the amount and the difference between them.	Solve problems involving ratios.
Week 4	Solve non-algebraic problems involving direct proportion.	Solve non-algebraic problems involving inverse proportion.	Use the compound units density and pressure.	Solve direct proportion/ratio/fraction questions.
Week 5	Understand the concepts of perimeter and area. Understand which units to use.	Find the area of rectangles and compound shapes constructed from rectangles. Find the length of one side given the area and the length of the other side.	Find the area of triangles and parallelograms. Find the base/height given the area and height/base.	Find the area of a trapezium. Apply the correct formula when finding the area of rectangles/parallelograms or trapeziums.
Week 6	Solve problems involving area of plane shapes.	Find the volume of a prism and know the correct units to use.	Find the volume of a cylinder and know the correct units to use.	Solve problems involving volume of cylinders and prisms.

		Find the missing dimension given the volume and other dimensions.	Find the radius/height given the volume and height/radius.	
Week 7	Area of a circle, semi-circle and quadrant.	Solve problems involving area and circumference of circles.	Find arc lengths and the area of sectors.	Understand plans and elevations.

Autumn Term 1 Year 11 Higher Maths

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Week 1	Understand the meaning of a solution. Form and solve equations one- and two- step equations. Solve equations involving brackets and those with the unknown on both sides	Draw straight line graphs. Find solutions to equations using straight line graphs.	Form and solve one-step and two-step inequalities. Show inequalities on a number line. Interpret representations on number lines as inequalities. Form and solve inequalities with unknowns on both sides.	Represent solutions to single inequalities on a graph. Represent solutions to multiple inequalities on a graph.
Week 2	Understand what a quadratic equation is. Solve quadratic equations by factorisation.	Solve more complex quadratic equations by factorisation.	Solve quadratic inequalities in one variable.	Complete the square.
Week 3	Use multipliers to calculate percentage change. Find the original value after a percentage change.	Understand how to calculate repeated percentage change.	Solve problems involving growth and decay. Understand iterative processes.	Understand the relationship between fractions and recurring decimals.
Week 4	Know that the angle in a semicircle is 90° . Know that angles in the same segment are equal.	Know the relationship between the angle at the centre and the angle at the circumference. Use this in problem solving questions.	Know that opposite angles in a cyclic quadrilateral add to 180° . Use this in problem solving questions.	Know that the relationship between a radius and a chord. Use this in problem solving questions.
Week 5	Know that the angle between a radius and a tangent is 90° . Use this in problem solving questions.	Understand the symmetrical relationship between the angles created when two tangents are drawn from the same point. Use this in problem solving questions.	Understand and use the alternate segment theorem.	Use all the circle theorems in problem solving questions.
Week 6	Use the addition, subtraction and power of a power rules for integer indices. Understand and use the power zero.	Understand and use fractional indices.	Understand the limits of accuracy when rounding. Calculate upper and lower bounds. Use upper and lower bounds for problem solving,	Use upper and lower bounds for problem solving,
Week 7	Understand what a surd is. Simplify surds.	Rationalise the denominator.	Assessment	Feedback

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Week	Plot $y = mx + c$ Interpret $y = mx + c$ Find the equation of a straight line from a graph.	Find the equation of a straight line given one point and the gradient. Find the equation of straight line given two points. Find the equation of a line parallel to another given a point on the line.	Recognise when straight lines are perpendicular. Find the equations of perpendicular lines.	Plot and read from quadratic and cubic graphs. Understand the effect the sign of the highest power has on the shape of the graph.
Week 9	Identify and interpret roots and intercepts of quadratic and cubic graphs.	Plot and read from reciprocal graphs. Understand what an asymptote is.	Recognise graph shapes	Understand and use exponential graphs.
Week 10	Simplify ratios which involve different units. Use fractions in ratios.	Combine ratios.	Know and use the formulae for density and pressure $D = \frac{M}{V}$ $P = \frac{F}{A}$	Understand direct proportion. Construct complex direct proportion equations.
Week 11	Understand inverse proportion. Construct inverse proportion equations.	Solve complex ratio problems that are given in context.	Recognise and interpret graphs that illustrate direct and inverse proportion.	Find the gradient of a curve.
Week 12	Understand how to draw and interpret plans and elevations.	Understand and use the volume of cylinders and cones.	Understand and use the volume of a sphere. Understand and use the surface area of a sphere.	Understands what cumulative frequency is and how to complete a cumulative frequency table.
Week 13	Draw cumulative frequency diagrams.	Interpret cumulative frequency diagrams.	Find median and inter quartile range from a cumulative frequency diagram.	Draw and interpret box plots.
Week 14	Consolidation	Consolidation	Assessment	Feedback